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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,878	07/07/2003	Marcel Johannes Maria Bucks	LUM-PHNL020636	2602

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EXAMINER

NGUYEN, HIEP

ART UNIT PAPER NUMBER

2816

DATE MAILED: 10/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/614,878	<b>Applicant(s)</b> BUCKS ET AL.	
	<b>Examiner</b> Hiep Nguyen	<b>Art Unit</b> 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 2-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

Figures 1 and 3 are objected to because elements (I), (CC) and (IIIa) do not have functional labels.

### *Claim Objections*

Claim 1 is objected to because of the following informalities: the recitation “the circuitry for controlling the current through the output terminals” in claim 1, lines 14, lacks antecedent basis. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Vinciarelli (US Pat. 4,648,020).

Regarding claim 1, figures 2, 4, 5 show a circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals;

a DC-DC-converter (24, 26) coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element (L2);

a unidirectional element (42);

a switching element (32) coupled to the inductive element (L2) and the unidirectional element, and

a control circuit (24, 30) coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the

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DC-DC converter in the critical discontinuous mode and equipped with circuitry (24) for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit (24) coupled to the input terminals and the output terminals for controlling a time lapse  $T_{on}$  during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of  $V_{in}$  and  $V_{out}$ , wherein  $V_{in}$  is the voltage present between the input terminals and  $V_{out}$  is the voltage present between the output terminals. Note that the recitation "the LED array" is merely an intended use, thus, it has no patentable weight. Figure 4 shows that the DC-DC of Vinciarelli operates in the "critical continuous mode" and because circuit (24) is coupled between the inputs and outputs of the DC-DC converter, the frequency period of the control signal is a function of the input/output voltages.

Regarding claim 9, figure 4 shows that the output of the control circuit is a square wave.

Regarding claim 10, figures 2, 4, 5 show a DC-DC circuit for supplying a DC output signal. This DC output can be used as supply voltage for other circuits/components. Thus, the DC output of the circuit is able to provide DC voltage for a Liquid Crystal Display unit equipped with a backlight formed by a LED array.

Claims 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Popescu (US Pat. 6,478,097).

Regarding claim 1, figures 1A-C and 6 of Popescu shows a circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source ( $V_{in}$ );

output terminals;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element (L);

a unidirectional element (D);

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a switching element (Q) , inherently to be a transistor, coupled to the inductive element (L) and the unidirectional element, and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit (PWM O/P, CA, PWM Comp, VA, D clamp and Feed forward circuit) coupled to the input terminals and the output terminals for controlling a time lapse, the output of PWM O/P), during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of  $V_{in}$  and  $V_{out}$ , wherein  $V_{in}$  is the voltage present between the input terminals and  $V_{out}$  is the voltage present between the output terminals (col. 2, 3 and 4). Note that the recitation “the LED array” is merely an intended use thus, it has no patentable weight.

Regarding claims 9 and 10, the output of the PWM O/P is a square wave and the DC output ( $V_o$ ) can be used as supply voltage for other circuits/components. Thus, the DC output of the circuit is able to provide DC voltage for a Liquid Crystal Display unit equipped with a backlight formed by a LED array.

#### ***Allowable Subject Matter***

Claims 2-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

In the Remarks, page 9, last paragraph, the applicant argues that ‘the controller 30 is not equipped with circuitry for controlling the current flowing through the output terminals’ The claimed circuit is a basic circuit of a DC-DC converter. A

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switch (32) is turned on/off for controlling the amount of energy stored in the choke (inductor) and the stored energy is converted to a current which is delivered to the output. Figures 2 and 5 of Vinciarelli shows a DC-DC converter comprising an inductive element, a unidirectional element (diode), a switching element (32) and a **control circuit comprising controller (30) and (24)**. The control circuit is equipped with "circuitry for controlling the current through the output terminals" (24). **Circuit (24, drive module) is coupled to the input terminals and to the output terminals** for the on/off operation of the inductive element. Figures 2, 4 and col. 3, lines 5-15 explain more about the functioning of the "circuitry for controlling the current through the output terminals" (24). Element (30) and element (24) combined to form the control circuitry. In page 10, the Applicant argues that "only the converter 16 is coupled between the input terminals and the output terminals". In fact element (16) is only a **part** of the control circuit (30, 24) that controls the current through the output terminals and **circuit (24) is coupled to the input terminals and to the output terminals** for the on/off operation of the inductive element (col. 2, lines 30-43). In conclusion, reference (4,648,020) does include every limitation of the circuit of claim 1. Thus, the claims 1, 9 and 10 are rejected under US Pat. 4,648,020.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep Nguyen whose telephone number is (571) 272-1752. The examiner can normally be reached on Monday to Friday from 7:30am to 4:00pm.

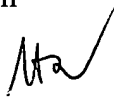
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hiep Nguyen

10-10-02



TUAN T. LAM  
PRIMARY EXAMINER